

Appl. No.: 10/599,574
Amdt. dated February 22, 2011
Reply to Office Action of September 27, 2010

Amendments to the Drawings:

Please replace Figures 1-4 with replacement Figures 1-4 included in this response in the appendix of amended drawing figures following the Remarks.

REMARKS

Claims 1-31 are pending. The Office Action objects to the drawings. The abstract is objected to. The Office Action further objects to the specification. Claims 1-16 and 18-31 are rejected under 35 U.S.C. § 101 for allegedly being directed to non-statutory subject matter. Claim 18 is indicated to meet the requirements of 35 U.S.C. § 112, sixth paragraph. Claims 6, 9, 23, and 26 are rejected under 35 U.S.C. § 112, second paragraph. Claims 1-4, 7, 12, 17-21, 24, and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 5,826,081 to Zolnowsky ("Zolnowsky") in view of U.S. Pat. No. 7,676,809 to Vaidyanathan et al. ("Vaidyanathan"). Claims 5 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zolnowsky in view of Vaid, and further in view of U.S. Pat. App. Pub. No. 2004/0045003 to Lake ("Lake"). Claims 6, 13-14, 23, and 30-31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zolnowsky in view of Vaid, and further in view of U.S. Pat. No. 5,729,710 to Magee et al. ("Magee"). Claims 8-11 and 25-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zolnowsky in view of Vaid and Lake, and further in view of U.S. Pat. No. 7,080,374 to Dahlstedt et al. ("Dahlstedt"). Claims 15 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zolnowsky in view of Vaid, and further in view of U.S. Pat. App. Pub. No. 2003/0018510 to Sanches ("Sanches").

As set forth above, Applicants have amended the specification, claims, and drawings. These amendments are fully supported by the originally filed specification and do not add new matter. In light of the amendments and subsequent remarks, Applicants respectfully submit that the claims are in condition for allowance.

The Objection to the Drawings is Overcome

Enclosed in the appendix following these remarks are replacement Figures 1-4. Elements in these replacement figures have been labeled with reference numbers as required by the Office. Additionally, corresponding amendments have been made to the specification so that the text of the specification refers to the reference numbers, where appropriate. As such, Applicants respectfully submit that the objection to the drawings is

overcome.

The Objection to the Abstract is Overcome

The Office objects to the abstract for not being presented on a separate sheet of paper. Applicants respectfully traverse the objection to the Abstract. In this regard, it appears that the Examiner is basing the objection on the publication of the PCT application of which the instant application is a national phase entry. Applicants respectfully refer the Examiner to the certified copy of the priority application, which, based on a review of the electronic file wrapper on the PAIR system, appears to have been filed on October 2, 2006. It will be appreciated that the Abstract in this certified copy of the priority application document does appear on a separate page.

Furthermore, even if the Examiner were to continue to make reference to the publication of the PCT application, Applicants note that the Abstract was published on the first page by convention of the Patent Cooperation Treaty and Applicants are not required to address the positioning of the Abstract for the national phase entry. As such, Applicants respectfully submit the objection to the abstract is overcome.

The Objections to the Specification are Overcome

The Office objects to the specification for not including the section headings set forth in 37 CFR 1.77(b). As set forth in the above amendments to the specification section, Applicants have inserted section heading in accordance with 37 CFR 1.77(b), where appropriate, in the originally filed specification.

The Office further objects to the specification for not describing Figures 1-4. As set forth in the above amendments to the specification section, Applicants have amended the specification to describe the figures. No new matter has been added as a result of these amendments.

The Office additionally objects to the title for allegedly not being descriptive. Applicants have amended the title and respectfully submit that the revised title is sufficiently descriptive of the claimed subject matter.

In view of the foregoing remarks, Applicants respectfully submit that all

objections to the specification have been overcome.

The Rejection of Claims 1-16 and 18-31 under §101 is Overcome

The Office Action alleges that Claims 1-16 and 18-31 are comprised of software alone and are directed to non-statutory subject matter. Applicants have amended Claim 1 to clarify that the apparatus comprises a *processor* and a *memory*, as suggested by the Examiner. Moreover, Applicants note that Claim 1 has been further amended to recite that the program code stored in the memory are configured, with the processor, to cause the apparatus to implement the scheduler and locking mechanism. As such, it will be appreciated that not only does Claim 1 recite appropriate hardware such that the claimed apparatus may not be construed as being solely comprised of software, but the hardware is recited to at least in part cause the apparatus to perform the claimed features. Applicants therefore respectfully submit that the rejection of Claim 1 and, by dependency, Claims 2-16 under § 101 is overcome.

With respect to Claim 18, Applicants have amended Claim 18 such that it is directed to a non-transitory computer-readable storage medium storing computer program code for an operating system for a computing device. It will be appreciated that the claimed non-transitory computer-readable storage medium is statutory subject matter under § 101. As such, Applicants respectfully submit that the rejection of Claim 18 under § 101 is overcome.

Claims 19-31 have been amended to depend at least in part from Claim 17, rather than Claim 18. As such, the rejection of Claims 19-31 under § 101 is rendered moot.

Claim 18 Should Not Be Interpreted under §112, Sixth Paragraph

As set forth in the above listing of amended claims, Applicants have amended Claim 18 to remove all “means for” language. As such, Applicants respectfully submit that Claim 18 is not a means plus function language claim and should not be interpreted under § 112, sixth paragraph.

The Rejection of Claims 6, 9, 23, and 26 under §112, Second Paragraph is Overcome

The Office alleges that Claims 6 and 23 are vague and indefinite because it is unclear what is meant by “non-nestable locking mechanisms.” Applicants respectfully submit that the meaning of the term “non-nestable” is well known by persons having ordinary skill in the art. Further, the specification provides ample description of the context of non-nestable locking mechanisms such that the term is neither vague nor indefinite, even when not considering the understanding of a person having ordinary skill in the art. In particular, Applicants respectfully refer the Examiner at least to the last bullet point on page 10 of the specification, the third paragraph on page 11 of the specification, and the first bullet point on page 14 of the specification.

The Office further alleges that Claims 9 and 26 are vague and indefinite because it is unclear what is meant by “replaceable memory model.” Applicants respectfully refer the Examiner to the first full paragraph of page 8 of the specification. In this regard, in some embodiments, a kernel may be agnostic with respect to managing memory and memory management may be delegated to an external module, referred to as a memory model. The kernel may provide a hook to allow the memory model to perform address space switching on reschedule. Accordingly, in such embodiments, the memory model may be “replaceable,” so long as it is compatible with the kernel and/or a hook that may be provided thereby. Examples of such memory models are described in paragraphs 3-5 on page 8 of the specification.

In view of the foregoing remarks, Applicants respectfully submit that the rejections under § 112, second paragraph are overcome.

The Rejection of Independent Claims 1, 17, and 18 under §103(a) is Overcome

Amended independent Claim 1 is directed to an apparatus comprising a processor and a memory storing computer program code. The at least one memory and stored computer program code are configured, with the at least one processor, to cause the apparatus to at least implement a scheduler incorporating an algorithm for ordering the running of threads of execution having different priorities. The scheduler maintains a ready list of threads which are scheduled to run on the device, ordered by priority. The at least one memory and stored computer program code are configured, with the at least one

processor, to further cause the apparatus to implement at least one locking mechanism configured to block access to a resource from all threads except for a thread that holds the locking mechanism. In an instance in which the scheduler selects a thread on the ready list to run, but the selected thread is blocked from running because a resource it requires is blocked, the scheduler does not switch to the blocked thread but retains the blocked thread in its place by priority on the ready list and instead yields to the thread which holds the locking mechanism and causes the thread which holds the locking mechanism to run. Independent Claims 17 and 18 are directed to a method and a non-transitory computer readable storage medium, respectively, and, though each has its own respective scope, have been amended to recite features substantially similar to those of Claim 1 insofar as this discussion is concerned.

The Office alleges that the independent claims (Claims 1, 17, and 18) are unpatentable over the combination of Zolnowsky and Vaidyanathan. While Applicants respectfully disagree with the position of the Office, Applicants have amended the independent claims to recite the feature that in an instance in which the scheduler selects a thread on the ready list to run, but the selected thread is blocked from running because a resource it requires is blocked, the scheduler does not switch to the blocked thread but retains the blocked thread in its place by priority on the ready list and instead yields to the thread which holds the locking mechanism and causes the thread which holds the locking mechanism to run.

Applicants respectfully submit that the combination of Zolnowsky and Vaidyanathan fails to teach or suggest this feature. Moreover, none of the other cited references, whether taken alone or in combination with Zolnowsky and Vaidyanathan, cure the deficiencies of the combination of Zolnowsky and Vaidyanathan. Applicants therefore respectfully submit that the amended independent claims are patentably distinct from the cited references, taken alone or in combination, such that the rejection is overcome. Applicants further respectfully submit that the independent claims are in condition for allowance.

The Rejection of the Dependent Claims is Overcome

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Because each of the dependent claims includes each of the recitations of a respective independent base claim, Applicants further submit that the dependent claims are patentably distinguishable from the cited references, taken alone or in combination, for at least those reasons discussed above. Accordingly, Applicants respectfully submit that the rejections of the dependent claims are overcome and the dependent claims are in condition for allowance.

CONCLUSION

In view of the amended claims and remarks presented above, it is respectfully submitted that all of the present claims of the present application are in condition for immediate allowance. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicants' undersigned attorney to resolve any remaining issues in order to expedite examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



Charles A. Leyes
Registration No. 61,317

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

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Appendix of Amended Figures